CIRC ACCESSION NO--AP0112616   UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   PROCESSING DATE--30OCT70
PRESSURE POLYETHYLENE (I) FILM ABSORBS SIMILAR AT 22DEGREES AND 3 MM PARTIAL BZCL
MIN.   IRRADN. OF THIS FILM FOR 20 MIN GAVE SIMILAR TO 0.2PERCENT BZCL IN 2-3
CROSSLINKING.   THIS REACTION IS 1.87 ORDER, WHICH INDICATES THAT 2 LIGHT
QUANTA PARTICIPATE.   THE REACTION INVOLVES THE FORMATION OF PH AND CLCO
RADICALS WHICH ADD TO I, CROSSLINKING IT.
VYSOKOMOL. SOEDIN., KIEV, USSR.   FACILITY: INST. KHIM.

UNCLASSIFIED

TITLE--PHOTOSENSITIZED VAPOR PHASE GRAFT COPOLYMERIZATION OF VINYL
     ISOCYANATE ON POLYETHYLENE FILMS -U-   PROCESSING DATE--03JUL70

AUTHOR--KACHAN, A.A., LEBO, YU.G., SHRUBOVICH, V.A.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(1), 214-19

DATE PUBLISHED------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--PHOTOSENSITIVITY, COPOLYMERIZATION, ORGANIC ISOCYANATE,
     POLYETHYLENE, MOLECULAR WEIGHT, PLASTIC FILM, LIGHT ABSORPTION,
     PHOTOCHEMISTRY

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CIRC ACCESSION NO--APCC48837   STEP NO--UR/0459/70/012/001/0214/0219

UNCLASSIFIED

91096m Photosensitized vapor-phase graft copolymerization of vinyl isocyanate on polyethylene films. Kachan, A. A.; Lebo, Yu. G.; Shrubovich, V. A. (Inst. Khim. Vysokomol. Soedin., Kiev, USSR). Vysokomol. Soedin., Ser. A 1970, 12(1), 214-19 (Russ). The photosensitized graft copolymn. of vinyl isocyanate (I) on polyethylene (II) films in the presence of benzophenone (III) was investigated. Light of wavelength 350 mμ, corresponding to the n-π^* transition of III, increased the mol. wt. of the films compared with the mol. wt. obtained with $\lambda = 253.7$ mμ (π-π^* transition of III). Switching off the light source stopped the increase in mol. wt. Neither evacuation of the system nor use of solvents decreased the mol. wt. Prior irradn. of films contg. III in the absence of I at 1×10^{-7} einstein/cm^2-sec did not affect the graft copolymn. Absorption of light by III apparently gave macroradicals in II which initiated I grafting. Macroradical formation was also confirmed by H evolution during irradn. of II films contg. III at $\lambda \geq 320$ mμ. The equil. grafting rate (w) with II films of thickness 70 and 200 mμ was proportional to the area of the films and not to their thickness, indicating that the process was localized in the surface layer. Since w was proportional to the square of the light intensity, 2 quanta of light participated in effecting the primary photochem. reaction. DBJR

Adsorption

USSR

SHTIN, A. P., SHRYGIN, L. M., and GONCHAR, V. F.

UDC 541.6

"Change in the Structure and Adsorption Properties of Titanium Dioxide During Hydrothermal Treatment"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 47, No 2, Feb 73, p 485

Abstract: Treatment of TiO_2 samples in an autoclave at 50-350°C for 3 hrs leads to changes in phase composition and in the size of the primary particles. Up to 50°C the primary particles undergo diminution in size, resulting in increased specific surface area. As the temperature increases, roentgeno-amorphous TiO_2 converts to anatase and suddenly an increase in particle size begins to take place, lowering the specific surface area. The dimensions of the pores are changed during these processes, the specific volume remaining unaltered. The sorption capacity curves for Cu^{2+} and Ca^{2+} expressed as functions of the temperature, mimic closely the curves of specific surface changes discussed above.

1/1

USSR
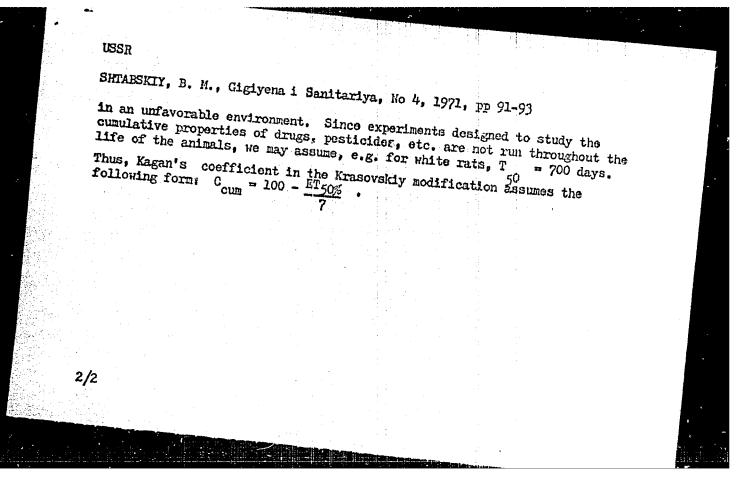
SHTABSKIY, B. M., Chair of General Hygiene, L'vov Medical Institute

"Coefficient of Accumulation and Zone of Cumulative Action of Chemical Substances"

Abstract: The cumulative properties of chemical substances can be evaluated from a formula that includes Yu. S. Kagan's coefficient of accumulation (C_{cum}), i.e., the ratio of $LD_{50(n)}$ to $LD_{50(1)}$ (or $DE_{50(n)}:DE_{50(1)}$) and G. N. Krasovskiy's zone of cumulative action, i.e., the ratio of $LD_{50(1)}$ to a dose as close as possible to DE_0 with graduated recording of the effect in a 2- to 3-week experiment ("threshold dose"). In ordinary experiments with n injections of $1/a$th part of $LD_{50(1)}$, it is not the dose responsible for the final effect that is to be determined, but the time in which the effect is achieved, i.e., $C_{cum} = ET_{50}/a$. ET_{50} characterizes not only the time required to achieve a certain effect but the ability of the system to exist (maintain its fitness) 1/2

- 62 -

USSR

SHTABSKIY, B. M., Gigiyena i Sanitariya, No 4, 1971, pp 91-93

in an unfavorable environment. Since experiments designed to study the cumulative properties of drugs, pesticides, etc. are not run throughout the life of the animals, we may assume, e.g. for white rats, T_{50} = 700 days. Thus, Kagan's coefficient in the Krasovskiy modification assumes the following form: $C_{cum} = 100 - \dfrac{ET_{50\%}}{7}$.

2/2

USSR

SHTABTSOV, V. L., Meditsina Publishing House, 1972

USSR

SHTABTSOV, V. I.

"Rapid Emergency Diagnosis in Neurotraumatology"

"Meditsina" Publishing House, Leningrad, 1972

Forward   TABLE OF CONTENTS

Introduction

- 117 -

USSR

SHTABTSOV, V. L., Meditsina Publishing House, 1972

USSR

GRISHIN, A. D., GUTSALO, G. I., SHTAL'MAN, S. G., ABRYUTIN, A. A., DRONOV, L. A., SOLOMONOV, V. M., KROL', A. Ya. and BRITVIN, O. V., (all engineers); and Candidate of Technical Sciences VIKHREV, Yu. V., ORGRES-VTI-Kostromskaya GRES

UDC 621.181.001.5

"Results of a Study of the Combustion and Temperature Regime of the Lower Radiation Section of the TGMP-114 Boiler"

Moscow, Teploenergetika, No 3, 1973, pp 43-46

Abstract: Earlier gas-mazut boilers of this general type were not completely satisfactory on account of the low reliability of the heating surfaces (mainly the lower radiation section) and the great heat flow in the combustion chamber.

This difficulty has been corrected in the new main-series supercritical pressure TGMP-114 boiler by reducing the number of boilers (from 8 to 6), securing maximal removal of the extreme burners from the side walls, and use of recirculation of cold smoke gases into the lower part of the furnace chamber.

The direct-flow TGMP-114 boiler has an output of 950 t/hr, with steam parameters of 255 kg/cm2 and 565/570°C. Analysis of operational data on chemical control

1/2

- 25 -

USSR

GRISHIN, A. D., et al., Teploenergetika, No 3, 1973, pp 43-46

shows that in 1971 iron content of feed water was 10-15 µg/kg, 15-20 µg/kg
the previous year, and 20-50 µg/kg during the start-up period in 1969, with
high content of 100-150 µg/kg in individual cases. These facts point up the
formation of iron oxide deposits as a basic cause of the external corrosion
of the screening pipes of the lower radiation section, and emphasize the
necessity of water control and chemical cleansing.

2/2

UDC 543.53:539.1.074.4.082

USSR

KARTASHEV, Ye. R., CHULKIN, V. L., SHTAN', A. S.

"Use of a Cerenkow Counter to Determine the Content of Certain Elements in Solutions by the Neutron Activation Method"

Tr. VNII Radiats. Tekhn. [Works of All-Union Scientific Research Institute for Radiation Technology], 1972, No 7, 118-123 (Translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, No 12, 1972, Abstract No 12.32.996, by V. S. K.).

Translation: A table of elements is presented, solutions of which form iso- topes during activation analysis upon bombardment by neutrons which emit high- energy beta particles. It is suggested that the concentration of these elements be determined using a Cerenkow counter as a detector. An installa- tion is developed, consisting of an activation chamber (C) with neutron source surrounded by a moderator, a measurement C, systems providing for even pump- ing of the solution being analyzed through the measurement and activation C, and recording apparatus. The measurement C has a cylindrical shape with nipples for injection and withdrawal of the solution. The walls of the C are coated to provide diffuse reflection. The ends of the C are made of organic glass, in optical contact with the output windows of an FEU-56 photomultiplier.

1/2

PONOMAREV, YE. G., TYUFYAKOV, N. D., SHTAN', A. S., and
YASKEVICH, V. S.

"Study of Formation of Neutron Beams From Isotope Neutron Sources"

Translation: Experimental studies were performed into the in-
fluence of individual factors on beam characteristics. The
measurements were performed in a water tank (1000 mm diameter,
1200 mm high) with two sources (Pu^{238} + Be and Cf^{252}), having
different fast-neutron energy spectra. In order to reduce the
perturbations of the neutron flux, the source and collimator
holders were made of organic glass, while the collimators them-
selves were made of paper soaked in paraffin or of steel pipe
with a wall thickness of 0.1 mm. Neutron flux measurements were
performed using indium foils as well as a scintillation counter
with an LiI (Eu) single crystal enriched to 90% Li^6 (crystal
diameter 30 mm, thickness 4.4 mm). 4 figures, 8 biblio. refs.

1/1

USSR   UDC 621.039.84

TYUFYAKOV, N. D., SHTAN', A. S., YASKEVICH, V. S., KOZLOV, A. G., and PAVLOVICH, V. YE.

"Spectral Characteristics of Neutron Sources Based on Pu^{238}"

Prikl. Yadern. Spektroskopiya (Applied Nuclear Spectroscopy -- collection of works), No 1, Moscow, Atomizdat Press 1970, pp 24-27 (from Referativnyy Zhurnal-Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.138)

Translation: A single-crystal fast neutron scintillation spectrometer was used in combination with a 512-channel amplitude analyzer to measure the spectra; discrimination of the γ background was based on the time of scintillation of a stilbene crystal. The spectrometer was calibrated for the γ radiation of of the isotopes Cs^{137} and Zn^{65}. In subtracting the background, the shadow cone from a mixture of paraffin and boron carbide was used. During measurements, the neutron source and detector were placed at a distance of about 2 m from the walls of the room. The results of investigations confirmed the expediency of using Pu^{238} to study isotope α_n sources. The advantages of these

1/2

USSR

TYUFYAKOV, N. D., et al., Prikl. Yadern. Spektroskopiya, No 1,
Moscow, Atomizdat Press 1970, pp 24-27 (from Referativnyy
Zhurnal-Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.138)

sources are felt primarily with a yield of 10^7-10^8 n/sec^{-2} and
more. It is assumed that the production of intermetallic com-
pounds of Pu^{238} with the target material allows the yield of
neutrons per unit mass of α radiator to be increased by
several times in comparison with the sources studied. 2 figures,
5 biblio. refs.

USSR   UDC 621.039.84

TYUPYAKOV, N. D., SHTAN', A. S., YASKEVICH, V. S., KOZLOV, A. G.,
and PAVLOVICH, V. YE.

"Spectral Characteristics of Neutron Sources Based on Pu^{238}"

Translation: A single-crystal fast neutron scintillation spectro-
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of the isotopes Cs^{137} and Zn^{65}. In subtracting the background,
the shadow cone from a mixture of paraffin and boron carbide was
used. During measurements, the neutron source and detector were
placed at a distance of about 2 m from the walls of the room.
The results of investigations confirmed the expediency of using
Pu^{238} to study isotope α_n sources. The advantages of these
1/2

USSR

TYUFYAKOV, N. D., et al., Prikl. Yadern. Spektroskopiya, No 1,
Moscow, Atomizdat Press 1970, pp 24-27 (from Referativnyy
Zhurnal-Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.138)

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more. It is assumed that the production of intermetallic com-
pounds of Pu^{238} with the target material allows the yield of
neutrons per unit mass of α radiator to be increased by
several times in comparison with the sources studied. 2 figures,
5 biblio. refs.

2/2

USSR

UDC 621.039.51

PONOMAREV, YE. G., TYUFYAKOV, N. D., SHTAN', A. S., and
YASKEVICH, V. S.

"Study of Formation of Neutron Beams From Isotope Neutron Sources"

Tr. VNII Radiats. Tekhn. (Works of All-Union Scientific Research
Institute for Radiation Equipment), No 5, 1970, pp 98-103 (from
Referativnyy Zhurnal-Yadernyye Reaktor, No 3, 1971, Abstract No
3.50.75

Translation: Experimental studies were performed into the in-
fluence of individual factors on beam characteristics. The
measurements were performed in a water tank (1000 mm diameter,
1200 mm high) with two sources (Pu^{238} + Be and Cf^{252}), having
different fast-neutron energy spectra. In order to reduce the
perturbations of the neutron flux, the source and collimator
holders were made of organic glass, while the collimators them-
selves were made of paper soaked in paraffin or of steel pipe
with a wall thickness of 0.1 mm. Neutron flux measurements were
performed using indium foils as well as a scintillation counter
with an LiI (Eu) single crystal enriched to 90% Li^6 (crystal
diameter 30 mm, thickness 4.4 mm). 4 figures, 8 biblio. refs.

1/1

Hydraulic and Pneumatic

UDC: 539.4.624

USSR

SHTAN'KO, L. F.

"Determination of the Calculated Eccentricity Between Centers of Mass and Rigidity of a Pier Consisting of one Section Formed by Possible Heterogeneities of Rigidity of the Pile Field"

Seysmostoykost' Gidrotekhn. i Portov. Sooruzh. Primor'ya. Ch. 1 [Seismic Stability of Water Engineering and Port Structures, Part 1 -- Collection of Works], Vladivostok, 1972, pp 150-155 (Translated from Referativnyy Zhurnal Mekhanika, No 12, 1972, Abstract No 12V935, by A. I. Koppel')

Translation: The eccentricity is determined between the centers of mass and rigidity of a pier consisting of one section. The presence of eccentricity with symmetrical design results from non-identical bending rigidities of the pile due to non-identical end finishing conditions. The distribution of coefficients of rigidity follows the normal rule. The problem is solved by methods from the theory of probabilities and mathematical statistics. Projections of the eccentricity on the coordinate axes are used as random variables. The studies were performed for one projection. Expressions and graphs are produced for the mean square deviation of eccentricity with various numbers of piles in a row and numbers of rows. A calculation example is presented. An approximate method is given for calculation of the mean square deviation of eccentricity with a small number of experiments.

USSR   UDC 621.357.3.035.4:669.14(088.8)

SHTAN'KO, V. M., LIPKIN, Ya. N., NOVIKOV, V. G., VOLKOV, Yu. M., STRIZHAK,
G. K., RABINOVICH, O. Ya., ZIMOVETS, V. G., DANILOV, A. M., MATVEYEV, Yu.
M., MEDNIKOV, Yu. A.

"Electrolyte for Electrochemical Polishing of Products"

Translation: An electrolyte for electrochemical polishing of products, for
example of stainless steel, differing in that in order to improve the quality
of polishing and intensify the process, a foam suppressor is introduced to
the electrolyte with the following relationship of components (in wt.%):
orthophosphoric acid 30-70, H_2SO_4 10-40, H_2O 10-30 and above 100%. Surfac-
tants based on peptide and polypeptide salts, 1-10 g/l, foam suppressor
0.001-1 g/l. Polymethylsiloxane liquid is used as the foam suppressor.

Abstract: In order to determine the relation between the parameters of the deflecting system and the characteristics of a traveling wave tube (TWT), and also to establish the influence of various factors on the frequency and time properties of TWT's, the authors calculate the frequency responses and transfer characteristics of a TWT with regard to the transit time of a helix turn, mismatch between the velocities of the electromagnetic wave and of the electrons themselves, dispersion and attenuation in the deflecting system, the frequency dependence of the wave impedance of the system, reflections from its input and output, and the dependence of the transverse component of the electric field on frequency when constant power is transmitted through the system.

1/1

UDC: 621.376.43

USSR

SHTAREV, N. N., KARATAYEV. N. A.

"A Ring-Type Phase Detector With Split Load"

Tr. Tomskogo in-ta radioelektron. i elektron. tekhn. (Works of the Tomsk Institute of Radio Electronics and Electronic Technology), 1970, 16, pp 117-123 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7D30)

Translation: The stability of the detector is analyzed as a function of temperature and transformer asymmetry. Bibliography of two titles. N. S.

1/1

USSR

UDC: 621.376.43

SHTAREV, N. N., KARATAYEVA, N. A.

"Zero Drift of a Phase Detector"

Tr. Tomskogo in-ta radioelektron. i elektron. tekhn. (Works of the Tomsk Institute of Radio Electronics and Electronic Technology), 1970, 16, pp 105-116 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7D29)

Translation: The paper gives a theoretical analysis of the temperature instability of a phase detector. The resultant expression for zero drift is also used to evaluate the amplitude error which arises because of the difference between semiconductor diodes in the phase detector. Methods of reducing this error are indicated. Bibliography of three titles. N. S.

1/1

Publications

USSR

SHTARK, M. B.

Mozg Zimmespyashchikh (The Brain of Hibernators), Novosibirsk, Izdatel'stvo Nauka, 1970

Translation: Winter torpor in mammals is accompanied by a prolonged decrease in brain temperature to nearly 0°C. Under the conditions of a natural awakening, the return to a normal temperature is characterized by restoration of the temperature of the brain matter, the neurohumoral regulation of physiological functions, the conditioned reflex mechanisms of the brain, and of the memory and complex forms of behavior. The unusual nature of this brain activity is one of the most interesting enigmas in hibernation.

Based on analyses of the bioelectrical and histochemical changes in, and electron microscopic studies of, the brain of hibernating animals, the author of the monograph develops a neurophysiological concept of hibernation, and attempts to discover the basic patterns of functional organization in the hibernators' "cooled" brain. The monograph gives the first detailed description of electrical changes in the brain of hibernating animals at all stages of natural adaptation: active wakefulness, going into hibernation, torpor, and tentative and final awakening.

1/4

USSR

SHTARK, M. B., Izdatel'stvo Nauka, 1970

The facts obtained by the author demonstrate that the preservation of brain activity at extremely low temperatures is not only the result of genetically determined resistance of hibernators' brain tissue to low temperatures, but also of the special organization of neuronal and systemic interaction between cortical and subcortical structures.

Author's abstract: Hibernation in mammals is accompanied by a prolonged decrease in brain temperature down to approximately $0^\circ C$. The return to normal temperature in natural arousal is characterized by the restoration of brain substance temperature, of neurohumoral regulation of the physiological functions, the conditioned reflex mechanisms of the brain as well as restoration of memory and complicated behavior forms. The peculiarity of the brain activity is one of the most fascinating mysteries in hibernation.

Basing himself on the analysis of the bioelectrical and histochemical changes and data of electron microscopy in the hibernant brain, the author of the monograph formulates a neurophysiological conception of hibernation and attempts to establishethe basic laws of functional organization of the "cooled" hibernant brain. For the first time a detailed description of electrical changes in the hibernant brain is given in the monograph concerning all the stages of natural adaptation, keeping active vigil, incipient hibernation,

2/4

- 84 -

USSR

SHTARK, M. B., Izdatel'stvo Nauka, 1970

torpor, tentative and definitive awakening.

The data obtained by the author show that the conservation of the brain activity at extremely low temperatures is not only a consequence of the genetically determined resistance of the tissue elements of a hibernant's brain, but also of the peculiar interaction and system interaction of the cortex and subcortex structures.

3/4

USSR

SHTARK, M. B., Izdatel'stvo Nauka, 1970

4/4

Acc. Nr: Abstracting Service: Ref. Code
AP0048841   CHEMICAL ABST.   5-76   UR0459

91077f Correlation between the structure and properties of plasticized poly(vinyl chloride). Shtarkman, B. P.; Yatsynina, T. L.; Balakirskaya, V. L. (USSR). Vysokomol. Soedin., Ser. A 1970, 12(1), 149-53 (Russ). Dispersions of com. poly(vinyl chloride) (I) (mol. wt. 150,000) were prepd. at 160-80° in bis(2-ethylhexyl) phthalate (II) and compressed or allowed to solidify into films. The rates of II extn. with MeOH at room temp., gas permeability, elec. cond., and Brilliant Green diffusion rates for the films all decreased with increasing I concn. The elasticity modulus and glass temp. of the films increased with I concn. The plots of I concn. vs. film properties have inflections at ~50% concn. Below 50% I concn. the structure consists of a fibrillar network in a continuous liq. II phase. Above 50% the bubbles of II are encapsulated by I fibrils.   CPJR •

LD

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REEL/FRAME
19800608

USSR

UDC: 8.74

MIKHELEV, V. M., SHTARKMAN, VIK. S.

"MAKROKOD (A Description of the Language)"

MAKROKOD (Opisaniye Razyka) [English version above], Institute of Applied Mathematics, Academy of Sciences, USSR, Preprint No 24, Moscow, 1972, 50 pp (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V558K)

Translation: MAKROKOD, an expansion of AVTOKOD BEMSH, is described. In this language, the programmer can replace groups of autocode statements with individual statements called macroinstructions, the sense of which is fixed by macrodefinition. These statements, which are instructions for the macrogenerator, can perform conditional translation both of macrodefinitions and of the main program. The effectiveness of conditional translation is increased by introducing several types of macrovariables and built-in atribute functions.

1/1

USSR

UDC 536.24

<u>SHTAROSHOL'SKI</u>, O. V.

"Application of Heat Exchange Equations in Calculating the Thermal Regime of Water Flows"

V sb. MAGI Simpoz. Led. i yego vozdeystviye na gidrotekhn. sooruzh., 1972 (MAGI Simposium. Ice and Its Effect on Hydroengineering Installations, 1972 -- Collection of Works), Place of publication not given, 1972, pp 283-287 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B912)

Translation: Outlines of idealized and actual heat exchange problems of open and closed water flows with the surrounding medium are discussed. It is shown that a combination of different hydraulic and thermal conditions at the bottom and at the surface of the water flow leads to the rise of one or another temperature and velocity distribution over the live cross section of the liquid. Particular attention is given to the effect of ice cover, its roughness, and to its insulating effect. It is emphasized that the temperature is an exponential function of the relative coordinate with respect to depth and of the Reynolds number. 8 ref. A. I. Pekhovich.

1/1

USSR

UDC: 519.2

GUBENKO, L. G., SHTATLAND, E. S.

"Controllable Markov and Semi-Markov Models and Some Specific Problems of Optimizing Stochastic Systems"

Kiev, Upravlyayemyye sluchayn. protsessy i sistemy--sbornik (Controllable Random Processes and Systems--collection of works), 1973, pp 87-119 (from RZh-Kibernetika, No 5, May 73, abstract No 5V98 by the authors)

Translation: The paper discusses controllable Markov processes with discrete time, and controllable semi-Markov processes with spaces of states and solutions (controls) of fairly general structure. The set of allowable solutions in each state depends on the index of the state. The criterion of optimality is the minimum anticipated return per unit of time assuming infinite duration of functioning of the controllable system. Specific problems of optimizing queuing, storage and monitoring systems are considered by way of application.

1/1

USSR

GUBENKO, L. G., SHTATLAND, E. S.

"Controllable Markov Processes with Discrete Time"

Translation: The problem of optimal control of a Markov process with discrete time is studied. The spaces of states X and of controls A are certain full separable metric spaces. The set of permissible controls in states $x \notin X$ is a nonempty closed set $A_x \subseteq A$. The criterion of optimality is the mean progress per unit time. Sufficient conditions are presented for existence of optimal Markov stable non-randomized strategies.

1/1

USSR

UDC 539.21

TOLTYGO, K. B., and SHTAYERMAN, E. Ya., Donets Physical-Technical Institute, Ukrainian SSR Academy of Sciences

"Specification of Band Electron Wave Functions and Energies in the s-band of NaCl"

Abstract: Various efforts have been made to calculate parameters of the band structure of NaCl, using quasi-atomic functions X_1 and X_2, centered around the Na^+ and Cl^- nuclei, respectively; it is desirable to choose the most convenient and accurate wave function for calculating the states of polarons, impurity centers, excitons, etc. The enormous calculations of all necessary integrals have caused significant errors in the results. The authors have carried out calculations on a Minsk-22 computer and have selected what they consider a good value of $X_2 = (0.12-r)(0.54-r) [26.03(-2.5r)-4.078(-1.5r)]$. The results appear in three tables: 1) integrals of non-orthogonality and normalization coefficients; 2) matrix elements and integrals of non-orthogonality between the X_1 and X_2 functions of this article and a report by Z. Ya. Yevseyev, STT, No 5, p 2, 3, 4, 5, 1963; the values of energy E and the $-b_2/b_1$ ratio for the 1/2

USSR

TOLTYGO, K. B., and SHTAYERMAN, E. Ya., Ukrainskiy Fizicheskiy Zhurnal, Vol 18, No 11, Nov 73, pp 1914-1917

band electron in NaCl (lower band). There are also two figures: 1) dispersion pattern for the s-zone in NaCl according to the present article and according to the X_2 wave function of Yevseyev; 2) wave function of the electron at the base of the conductivity zone for the direction (100) $Na^+ - Cl^-$ and (110) Na^+-Na^+, with corresponding curves for X_2 from Yevseyev.

The calculations yield better values than previous works, corresponding more closely to various experimental results.

2/2

USSR

UDC 621.762.2:669.22

CHIZHIK, S. P., SHTAYNBERG, A. N., KAGAN, N. M., KHASIN, E. I., SHELEST, A. YE.,
DMITRIYENKO, V. YE., and LAYNER, D. I.

"Method of Producing Silver Granules"

USSR Authors' Certificate No 267079, Cl. 40b, 1/04; 31 b³, 9/00, (B 22f), filed
27 Apr 67, published 16 Jul 70 (from RZh-Metallurgiya, No 3, Mar 71, Abstract
No 3G404P by S. Krivonsova)

Translation: An alloy containing up to 50% Ag, the rest Al, is rolled into
strip and treated in alkali. In order to produce granules with up to 0.5%
Al content, the initial alloy is rolled into strip up to 0.5-5 mm in thick-
ness, and before alkali treatment is heated to 540-560°, held for 1.5 hr in
an inert atmosphere until a solid solution of Ag in Al forms, and is hardened.

1/1

USSR   ⟨   UDC: 616.031.57

MITSKEVICH, A.I., Candidate of Medical Sciences, SETEFAN, E.E. Aspirant, Chair
of General Surgery and Chair of Microbiology, Odessa Medical Institute

"Intraosseous Administration of Specific Sera for Prophylaxis and Treatment
of Gas Gangrene"

Kiev, Klinicheskaya Khirurgiya, No 3, 1970, pp 53-55

Abstract: Intraosseous introduction of therapeutic solution is simple and
safe. A stout injection needle is inserted directly into the bone. A
rubber bulb is attached to the free end containing the antiserum solution,
which is periodically injected into the bone. The arrangement is held in place
by a plaster bandage, allowing free manipulation of the patient, and transfers
from place to place. Animals were infected with Clostridium perfringens and
Clostridium septicum. One half of animals were treated by intramuscular in-
jection and the other half by intraosseous administration of specific antiserum
in similar doses. The ratio of survival of animals treated by the intraosseous
method was twice that of animals treated by intramuscular injection. In eight
patients with serious traumas, compound fractures, tissue maceration, or
traumatic amputations -- conditions which would favor development of gas
gangrene, the intraosseus method was an efficient prophylactic in all cases.
This method seems to be advantageous for other medications as well.

1/1

USSR

SHTEFAN, Yu. M.

"Standard Program for Calculation of Transfer Function From Transient Process Curve (areas method)"

Tr. Vses. N.-i. i Eksperim.-konstrukt. In-ta Prodovol'stv. Mashinostr. [Work of All-Union Scientific Research and Experimental Design Institute for Food Machinery], No 26, 1971, pp 85-92, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V715).

NO ABSTRACT:

1/1

- 56 -

USSR

ZAVILEVICH, M. L., SHTEFAN, Yu. M., ZHUKOVSKAYA, V. N.

"System of Standard Programs for the "Razdan-2" Computer"

Tr. Vses. N.-i i Eksperim.-konstrukt. In-ta Prodovol'stv. Mashinostr [Works of All-Union Scientific Research and Experimental-Design Institute for Food Machine Building], No 26, 1971, pp 117-151, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V697).

NO ABSTRACT.

1/1

USSR

SHTEFAN, Yu. M.

"Standard Program of Operations with Complex Numbers"

Tr. Vses. N.-i. i Eksperim.-konstrukt. In-ta Prodovol'stv. Mashinostr.
[Work of All-Union Scientific Research and Experimental Design Institute
for Food Machinery], No 26, 1971, pp 108-116, (Translated from Referativnyy
Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V708).

NO ABSTRACT.

1/1

- 53 -

USSR   UDC 547.759.3:668.819.45

SHTEINBERG, Ya. B., Rubezhnoye Branch of the Scientific Research Institute
of Organic Intermediates and Dyes, Rubezhnoye

"Benzo[c,d]indolecarbocyanines"

Abstract: Refluxing 1,2-dimethylbenzo[c,d]indolinium iodide with diphenyl-
formamidine yields 2-(β-anilinovinyl)-1-methylbenzo[c,d]-indolinium iodide,
m.p. 227-228. This product reacts with quaternary salts of the respective
2-methyl-N-alkylheterocyclic compounds to yield a series of assymetric
carboxyamines. To obtain the symmetric bis(1-methylbenzo[c,d]trimethine-
cyanine iodide, 1,2-dimehtylbenzo[c,d]indolinium iodide was refluxed with
orthoformate.

1/1

3

UDC 616.832.9-002.931.611.3-092.9

USSR

AVTSYN, A. P., BEREZINA, Ye. K., KENIG, E. E., DURSUNOVA, S. M., BELOVA, Ye. M.,
SHTEGEL'MAN, and ZHUKOV, V. G., Scientific Research Institute of Human Mor-
phology, Academy of Medical Sciences USSR, and All-Union Scientific Research
Institute of Antibiotics

"An Experimental Model of Leishmanial Meningoencephalitis"

Abstract: Intercerebral inoculation of mice with Leishmania donovani, strain
T-1, obtained from dogs, and other strains obtained from reptiles resulted in
the typical clinical picture of meningoencephalitis. The reaction to Leish-
mania and to the trauma was evident at the injection site in 14 days and 40
days later there were signs of inflammation of the meninges. The process be-
came generalized in the central nervous system after 160 days. Lymphoid in-
filtrates appeared in the pia mater and small granulomas in the brain tissue
proper.   Within the lymphoid infiltrates and granulomas, Leishmania were ob-
served. The granulomas consisted mainly of epithelioid cells. Actual pene-
tration of Leishmania into nerve cells could not be conclusively demonstrated.
The ease with which meningoencephalitis can be induced in mice with Leishmania
makes these animals suitable for use in experimental chemotherapy.

1/1

USSR

UDC 911.3.613.11(98)

SHTELING, N. N.

"The Effect of Far Northern Climatic Conditions on the Functional State of
the Human Organism under Chronic Ultra-High-Frequency Irradiation"

V sb. Akklimatiz. i krayev. patol. cheloveka na Severe (Acclimatization and
Regional Pathology of Man in the Far North--collection of works), Arkhangel'sk,
1970, pp 192-194 (from RZh-3b. Meditsinskaya Geografiya, No 1, Jan 71, Abstract
No 1.36.53)

Translation: A total of 69 people were studied, ages 29-36 years, who worked
with ultra-high-frequency generators (42 in the far North and 27 in the middle
zone of the USSR). Autonomic dystonia, hypotonia, bradycardia, muscle changes
on EKG, decrease of oxygenated blood after irradiation dosage, and changes in
optical, sensory and motor chronaxy were observed 1.8 times more frequently in
Northerners than in the central zone control group.

1/1

1/2   015
TITLE--GRANULAR AMMONIUM NITRATE -U-   UNCLASSIFIED   PROCESSING DATE--27NOV70

AUTHOR-(05)-SHAKHOVA, N.A., AKSELROD, L.S., MUKHINA, A.N., SHTELMASHENKO,
   G.V., POLYAKOV, N.N.
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 264,370
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970, 47(9)
DATE PUBLISHED--03MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--AMMONIUM NITRATE, CHEMICAL PATENT, CRYSTAL, FLUIDIZED BED

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/1453   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0126984
                                UNCLASSIFIED

CIRC ACCESSION NO--AA0126984   UNCLASSIFIED   PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POROUS NH_4NO_3 CRYSTALS ARE PREPD. BY DELIVERING AN 80-5PERCENT CONCD. NH_4NO_3 SOLN. INTO A FLUIDIZED BED AT 85-95DEGREES.

UNCLASSIFIED

USSR   UDC 613.2:632.95(478.9-22)

GONTOVAYA, N. A., and SHTENBERG, A. I., Republic Sanitary Epidemiological
Station, Ministry of Health Moldavian SSR, Kishinev, and Laboratory of
Pesticide Toxicology, Institute of Nutrition, Academy of Medical Sciences
USSR, Moscow

"Residual Amounts of Some Pesticides in Daily Food Rations of Residents in
Two Rural Microdistricts of the Moldavian SSR"

Abstract: The residual amounts of four pesticides present in the daily food
rations of the residents of two microdistricts in 1967-1969 were measured
and calculated according to the amounts of pesticides used in agriculture.
In the district with ample utilization of pesticides, the residual quantities
in food products consumed by man per day were: 0.04 mg of DDT, 0.32 mg of
hexachlorocyclohexane (HCCH), 0.01 mg of sevin, and 0.1 mg of chlorophos.
In the district with restricted use of pesticides, similar calculations
yielded twofold smaller figures: 0.02, 0.15, 0.004, and 0.047 mg respectively.
Measurements of two persistent presticides (DDT and HCCH), performed by
chromatographic and colorimetric methods on ready-made home and restaurant
meals, yielded essentially indentical results. These quantities do not
exceed the limits established for the concentration of these pesticides in
food in Moldavia, and they are much below the international standards estab-
lished for man.
1/1

USSR

YEREMENKO, V. N. and SHTEPA, T. D., Institute of Problems of Material Science, Academy of Sciences Ukrainian SSR

"Phase Diagram of Titanium-Palladium Systems"

Abstract: The inconsistency of earlier versions of the phase diagram for titanium-palladium systems with their x-ray data prompted the plotting of a new phase diagram as well as a detailed study of alloys of this system involving metallographic, x-ray diffraction, and differential thermal analyses. According to the new phase diagram, titanium is shown to form with palladium intermediate phases based on Ti_4Pd, Ti_2Pd, $TiPd$, Ti_2Pd_3, $TiPd_2$, and $TiPd_3$ compounds. In contrast to other reference data, it is shown that the Ti_4Pd phase is formed at about $600°C$; Ti_2Pd appears as a result of the ordering of the beta-solid solution; the phase $TiPd$ has a congruent melting point and $TiPd_2$ is formed by the peritectic reaction at $1400°C$. (3 illustrations, 2 tables, 12 bibliographic references)

1/1

Titanium

USSR

UDC: 669.295.5'232

YEREMENKO, V. N., and SHABEL, T. D. , Kiev

"Phase Diagram of the Titanium-Iridium System"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, no 6, Nov-Dec 70, pp 198-203

Abstract: The experimental homogeneous alloys (47 formulations over the entire range of concentrations) were made from titanium iodide and pure iridium powder. The alloys were studied by metallography, x-ray diffraction, and differential thermal analyses. Measurements were made of the temperatures of the beginning of melting as well as of the phase micro-hardness of the alloys. The obtained data were used as a basis for plotting the phase diagram of the Ti-Ir system showing solidus temperatures, single-phase alloys, two-phase alloys, β-phase transformations on quenching, and thermal analysis. It has been shown that the phase with a CsCl-like structure, which was revealed in alloys with 30-40 at.% Ir and was found to be stable down to room temperature, is a high-temperature modification of a TiIr-base phase stabilized with an excess content of titanium.

1/1

USSR

UDC 541.651.2

SHTEPANEK, A. S., ZASORINA, V. A., TKACHENKO, O. M., and KIRSANOV, O. V.,
Institute of Organic Chemistry Acad. Sc. Ukr. RSR

"N-Substituted Amides of Triphenylphosphazocarboxylic Acid"

Kiev, Dopovidi Akademii Nauk Ukrains'koi RSR, No 2, Feb 71, pp 153-155

Abstract: Triphenylphosphazohydride (I) reacted with carboxylic and sulfonic acid isocyanates forming N-acylamides of triphenylphosphazocarboxylic acid (II). With trimethylsiliconisocyanate (I) gave an addition product. With silicon tetraisocyanate (I) can react in several ways depending on the ratio of reagents; a 1:1 ratio gave an N-(silyltriisocyanate) amide of (II), the same product being obtained with a 4:1 ratio of (I) to the silicon compound after a 30 min reaction at +5°. The 4:1 ratio after 6 hrs at room temperature yielded $Si(NCO)_2[NC(O)N:P(C_6H_5)_3]_2$ and after 48 hrs -- $SiNCO[NC(O)N:P-(C_6H_5)_3]_3$. Reacting (I) with the dichloroanhydride of isocyanatophosphoric acid taken in a 1:1 ratio gave N-dichlorophosphorylamide of (II); when a 5:1 ratio was selected -- the product was N-(bis-triphenylphosphazophosphonyl amide) of (II).

1/2

USSR

SHTEPANEK, A. S., Dopovidi Akademii Nauk Ukrains'koi RSR, No 2, Feb 71, pp 153-155

Reacting (I) with derivatives of isocyanatophosphonic, isocyanatophosphinic, and isocyanatomethylphosphonic acids yield i N-phosphonyl amides or (II). Finally, reaction of (I) with benzo-2-isocyanato-1,3-dioxa-2-phospholine yielded N-(benzo-1,3-dioxa-2-phospholinamide) of (II).

2/2

SHTEPANEK, A. S., TKACHENKO, YE. N., KIRSANOV, A. V., Institute
of Organic Chemistry, Kiev, Academy of Sciences Ukrainian SSR

"p-Phenylenebisphosphazo Compounds. II"

Abstract: Tetraphenyl-p-phenylenebisphosphine reacts with hydrazoic
acid yielding hydrazoates of tetraphenyl-p-phenylenebisphosphazo-
hydride which, when reacted with sodium amide, is converted to
tetraphenyl-p-phenylenebisphosphazohydride. The latter is a strong
base, stronger than triethylamine by 3-4 orders of magnitude, and
is easily hydrolyzed with water. Tetraphenyl-p-phenylenebisphospha-
zohydride reacted with trichloroacetonitrile or with phenylacetate
forms tetraphenyl-p-phenylenebisphosphazotrichloroiminoacetyl and
tetraphenyl-p-phenylenebisphosphazonitrile. Tetraphenyl-p-
phenylenebisphosphine reacted with diethyl ester of N-chloromino-
carbonic acid yields a diethylester of tetraphenyl-p-phenylene-
bisphosphazocarbonic acid, and with benzoyl azide it gives tetra-
phenyl-p-phenylenebisphosphazobenzoyl.
1/1

1/3   019
TITLE--DERIVATIVES OF TRIPHENYLPHOSPHAZOIMINOACYLS -U-

AUTHOR-(03)-SHTEPANEK, A.S., TKACHENKO, YE.N., KIRSANOV, A.V.

CCUNTRY CF INFC--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(4), 766-70

DATE PUBLISHED------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--BENZENE DERIVATIVE, ORGANIC PHOSPHORUS COMPOUND, IMINE, AZO
COMPOUND, CHLORINATED ORGANIC COMPOUND, FLUORINATED ORGANIC COMPOUND,
CHEMICAL SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1185   STEP NO--UR/0079/70/040/004/0765/0770

CIRC ACCESSION NO--AP0128604
UNCLASSIFIED

2/3   . 019   UNCLASSIFIED   PROCESSING DATE--20NOV70
CIRC ACCESSION NO--AP0128604
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN EQUIMOLAR MIXT. OF ET SUB3 N,
ACID CHLORIDE AND RC(:NH)N:PPH SUB3 IN C SUB6 H SUB6 READILY PPTD. ET
SUB3 N.HCL; THE FILTRATE YIELDED SIMILAR TO 90PERCENT RC(:NR PRIME1)
N:PPH SUB3 IN UP TO 90PERCENT YIELDS (R AND R PRIME SHOWN): CCL SUB3,
PHSO SUB2, M. 166.5-68DEGREES; CF SUB3, PHSO SUB2, M. 166-7.5DEGREES;
MECCL SUB2, PHSO SUB2, M. 159.5-60DEGREES; CCL SUB3, BZ, M.
149-52DEGREES; CF SUB3, BZ, M. 157-8.5DEGREES; MECCL SUB2, BZ (I), M.
144-4.5DEGREES; CCL SUB3, P,O SUB2 NC SUB6 H SUB4 NO, M.
185.5-6.5DEGREES; CF SUB3, P,O SUB2 NC SUB6 H SUB4 NO, M. 178-9DEGREES;
CCI SUB3, P,O SUB2 NC SUB6 H SUB4 S, M. 201-2DEGREES; CF SUB3, P,O SUB2
NC SUB6 H SUB4 S, M. 178.5-8DEGREES; CCL SUB3 (PHO) SUB2 P(O), M.
138.5-40DEGREES; CF SUB3, (PHO) SUB2 P(O), M. 143.5-4.5DEGREES; CCL
SUB3, AC, M. 159-61.5DEGREES; CF SUB3, AC, M. 160-2DEGREES; CCL SUB3,
MEO SUB2 C, M. 166-7DEGREES; AND CF SUB3, MEO SUB2 C, M. 132-4DEGREES.
I HEATED 2 HR WITH AQ. ETOH GAVE 70PERCENT PH SUB3 P:NCOCCL SUB2 ME, M.
188-9DEGREES. CCL SUB3 C(:NH)N:PPH SUB3 AND 0.5 MOLE BRCN HEATED 8 HR
IN C SUB6 H SUB6 GAVE 75PERCENT CCL SUB3 C(:NCN)N:PPH SUB3, M.
170-1.5DEGREES; SIMILARLY WAS PREPD. THE CF SUB3 ANALOG, M.
139.5-40.5DEGREES. CF SUB3 C(:NH)N:PPH SUB3 (II) AND DRY HCL IN C SUB6
H SUB6 GAVE 94PERCENT (CF SUB3 C(:NH SUB2) N:PPH SUB3) PRIME POSITIVE
CL PRIME NEGATIVE, M. 202.5-3.5DEGREES; SIMILARLY WERE PREPD. (CCL
SUB3 C(:NH SUB2) N:PPH SUB3) PRIME POSITIVE BR PRIME NEGATIVE, M.
195-7DEGREES; AND (CF SUB3 C(:NH SUB2)N:PPH SUB3) PRIME POSITIVE BR
PRIME NEGATIVE, M. 209-10DEGREES.

UNCLASSIFIED

CIRC ACCESSION NO--AP0128604
ABSTRACT/EXTRACT--MEI AND II GAVE (CF SUB3 C(:NHME)N:PPH SUB3) PRIME
  POSITIVE I PRIME NEGATIVE, M. 184-8DEGREES; SIMILARLY WAS PREPD. THE CCL
  SUB3 ANALOG, M. 113-14DEGREES. II AND ME SUB3 COCL IN C SUB6 H SUB6
  GAVE AFTER 1 HR AT ROOM TEMP. AND 1 HR AT 90-100DEGREES 70PERCENT CF
  SUB3 C(:NCL)N:PPH SUB3 (III), M. 122-3DEGREES; SIMILARLY WAS PREPD.
  65PERCENT CCL SUB2 ME ANALOG, M. 156-9DEGREES. III AND PH SUB3 P IN ET
  SUB2 O GAVE IN 10 HR HEATING 75PERCENT (CF SUB3 C(N:PPH SUB3):NPPH SUB3)
  PRIME POSITIVE CL PRIME NEGATIVE, M. 232-3DEGREES; SIMILARLY WAS PREPD.
  CCL SUB2 ME ANALOG, M. 174-5DEGREES; BUT THE CCL SUB3 ANALOG DID NOT
  FORM. II AND KSCN IN ME SUB2 CO GAVE IN 2 HR HEATING 75PERCENT CF SUB3
  C(:NSCN)N:PPH SUB3, M. 145-5.5DEGREES; THE CCL SUB3 ANALOG M.
  152.5-3DEGREES.   FACILITY: INST. ORG. KHIM., KIEV, USSR.

UNCLASSIFIED

1/2   012   UNCLASSIFIED   PROCESSING DATE--18SEP70
TITLE--P,P',P,PHENYLENEBIS(P,P,DIPHENYLPHOSPHINE IMIDE) -U-

AUTHOR-(03)-KIRSANOV, A.V., TKACHENKO, E.N., SHTEPANEK, A.S.

COUNTRY OF INFO--USSR

SOURCE--DOPOV. AKAD. NAUK UKR. RSR, SER. B. 1970, 32(1), 63-4

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANIC PHOSPHORUS COMPOUND, IMIDE, BENZENE DERIVATIVE,
COMPLEX COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1985/1899   STEP NO--UR/0442/70/032/001/0063/0064

CIRC ACCESSION NO--AT0101943
                        UNCLASSIFIED

CIRC ACCESSION NO--AT0101943
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. P,PHENYLENEBIS(DIPHENYLPHOSPHINE)
GAVE WITH 4 MOLES HN SUB3 (P,(H SUB2 NP PRIME POSITIVE PH SUB2) SUB2 C
SUB6 H SUB4) (N SUB3 PRIME NEGATIVE) SUB2 WHICH REACTED WITH 2 MOLES
NANH SUB2 IN LIQ. NH SUB3 TO GIVE THE TITLE COMPD., P,PH SUB2 P(:NH)C
SUB6 H SUB4 P(:NH)PH SUB2 (I). ITS PK SUBA VALUES WERE DETD. IN AN AQ.
SOLN. (15.26 AND 14.26) AND IN MENO SUB2 (22.58 AND 21.50). WITH H SUB2
O, PHOCN, AND CCL SUB3 CN I GAVE P,(PH SUB2 P(O)) SUB2 C SUB6 H
SUB4,P,(PH SUB2 P(:NCN)) SUB2 C SUB6 H SUB4, AND P,(CCL SUB3 C(:NH)N:PPH
SUB2)SUB2 C SUB6 H SUB4, RESP. THE LAST WAS CONVERTED BY TERT,BUOCL TO
P,(CCL SUB3 C(:NCL)N:PPH SUB2) SUB2 C SUB6 H SUB4.

USSR

SHTEPANEK, A.S., TKACHENKO, YE.N., and KIRSANOV, A.V., Institute of Organic Chemistry, Kiev, Academy of Sciences Ukrainian SSR

"Triphenylphosphazoiminoacyl Derivatives"

Abstract: Triphenylphosphazoiminoacyls react with acid halides of various acids to give corresponding N-substituted triphenylphosphazoiminoacyls. The latter react with triphenylphosphine to give N-triphenylphosphonium chlorides of triphenylphosphazoiminoacyls and with potassium thiocyanate to give triphenylphosphazo-N-thiocyanogeniminoacyls. The basicity of the triphenylphosphazoiminoacyls was measured by V. P. KUKHAR' and A. A. PETRASHENKO.

1/1

USSR

UDC 547.558.1

SHTEPANEK, A. S., ZASORINA, V. A., and KIRSANOV, A. V.

"Derivatives of Triphenyl Phosphazo Sulfuric Acid"

Abstract: The derivatives of phosphazo sulfuric acid /A. V. Kirsanov, Izd. AN SSSSR, OKhN, 426, 1950; ZhOKh, No 22, 81, 88, 1346, 1952; A. Vandi, et al., Chem. Ind. 221, 1962/, including triphenyl phosphazo sulfuric acid /A. Vandi, et al., Chem. Ind., 221, 1962; R. Appel, et al., Z. anorg. Chem., No 311, 290, 1961/ have been studied very little. In continuing the studies of acylation of triphenyl phosphazo hydride /A. S. Shtepanek, et al., ZhOKh, No 39, 1475, 1969/, the authors obtained the acid chloride of triphenyl phosphazo sulfuric acid which is the initial material for synthesizing the greatest variety of derivatives of triphenyl phosphazo sulfuric acid. On reacting triphenyl phosphazo hydride with sulphuryl chloride, depending on the ratio of the reagents, the acid chloride of triphenyl phosphazo sulfuric acid or bistrithenylphosphazo sulfone is obtained. The acid chloride of triphenyl phosphazo sulfuric acid easily reacts with alcohols, ammonia, primary and secondary amines, hydrazine and sodium azide and gives the corresponding derivatives.
1/1

USSR

SHTERENBERG, L. YE., SLESAREV, V. N., and VERESHCHAGIN, L. F., Institute of Physics of High Pressures, Acad. Sc. USSR, Moscow

"The Influence of Alloying Elements on the Quantity of Diamonds Synthesized in Presence of Metal Catalysts"

Abstract: The reasons behind the influence of alloying elements on the quantity of diamonds synthesized in the system metal-carbon were studied. It was found that in a three compartment system $Fe + C + X$ a 5% addition of X (Al, Si, Mg, and Ni) gave higher yields of the diamonds. Cr and Mn failed to increase this yield. In the range of 3-5% sulfur increased the yield, but when 9% sulfur was added -- the yield dropped. Addition of $CaSi_2$ to nickel lowered the yield of diamonds, but addition of S to Ni_3C had no inhibitory effect. It is claimed that the thermodynamic factors determine the effect of alloying metals on the production of diamonds.

1/1

USSR   UDC 541.182

SHTERENTAL', M. I., Candidate of Technical Sciences, SUDIT, ZH. N., Candidate of Technical Sciences, and NAGIRNYY, YU. P., State Special Bureau for the Design of Machines for Chemical Plant Protection

"Number of Drops Recorded During Study of Aerosol Dispersion"

Abstract: In view of the widespread use of liquid-dispersing devices in agriculture and industry and the necessity to know the exact degree of dispersion achieved, the authors analyze the methods available for counting the drops into which a unit volume of the liquid is dispersed, point out the shortcomings of the methods, recommend a special logarythmic approach, and explain the derivation of the equation proposed.

1/1

91871k   New facts on the oxidation and selfignition of alkane-
air mixtures.   Lisichkin, A. M.; Nozhkina, I. A.; Shtern,
V. Ya. (Inst. Neftekhim. Sin. im. Topchieva, Moscow, USSR).
Dokl. Akad. Nauk SSSR 1970, 190(2), 381-2 [Phys. Chem]
(Russ). Oxidn. and autoignition of n-alkane-air mixts. was
studied at static conditions at 250-650°/0.1-15 atm. abs. In
the center of a stainless steel reaction vessel, was arranged a
turbulator with 112 1-1.2-mm diam. holes. The gas mixt. was
introduced into the reactor with a high velocity. The anal. of
the oxidn. and spontaneous ignition processes was made based
on the pressure, temp., luminosity, and compn. of the reaction
products. Several series of expts. differing in the methods of
introduction of the gas mixt. were made. When the time of
warming of the gas mixts. to the temp. of the walls of the reac-
tion vessel is sharply reduced, a low-temp. oxidn. process (with-
out formation of a cold flame) and low-temp. self-ignition of the
gas mixt. (similar to the one-stage hot explosion) can be achieved.

A. G. Streng

USSR   UDC 536.424

VERESHCHAGIN, L. F., Academician, SHTERENBERG, L. YE.,
SLESAREV, V. N., Institute of High-Pressure Physics of the Aca-
demy of Sciences USSR, Post Office: Akademgorodok of the
Podol'sk Region of Moscow Oblast

"On the Role of the Carbide Fe$_3$C in Diamond Synthesis"

Abstract: The various ideas as to the role of carbides in dia-
mond synthesis using such metals as Ta, Fe, Ni, Co and Mn as
catalyst-solvents is discussed. The Fe-C system proposed by
Giardini and Tydings is said to be doubtful, since theoretical
and experimental studies have shown that Fe$_3$C cementite enters a
stable phase under pressure. Since the solubility of cementite
and diamond in the region of diamond synthesis is less than the
solubility of graphite, diamond and cementite will be separated
from a carbon solution in molten iron because the formation of
Fe$_3$C must accompany the synthesis of diamond. The studies de-
scribed here support this hypothesis. It was shown that a car-
bide of Fe$_3$C is formed in the stability region of diamond.
1/2

USSR

Obtaining Fe_3C in the region of diamond growth indicates that its formation is a reaction accompanying diamond synthesis. To obtain diamonds in an iron-graphite system it is not sufficient that the pressure and temperature of the reaction correspond to the region of diamond synthesis; it is necessary that the amount of graphite exceed 25 at. % (relative to iron), corresponding to the stoichiometric composition of cementite. If the amount of graphite is equal to 25 at. %, only cementite is formed in the region of diamond growth. Since cementite enters a stable phase under high pressure, the region of diamond synthesis in the Fe-C system is limited to the left of the melting line of the iron-cementite eutectic under pressure (and not iron-graphite).

2/2

USSR

UDC: 621.373.531.1

BURAKOV, O. N., TISHENKO, A. M., SHTERK, M. D.

"Temperature Stabilization of the Pulse Duration of Multivibrators Based on Silicon Transistors"

Translation: The authors discuss a method of controllable stabilitron compensation of temperature changes in the pulse duration of multivibrators based on silicon transistors. An analysis is made and recommendations are given which can be used in designing multivibrators both in classical circuitry and on composite transistors. Experimental data are given. Bibliography of one title. Resumé.

1/1

USSR

SHTERMAN, V. S., GORDIYEVSKIY, A. V., FILIPPOV, E. L., and BRUK, S. V., Moscow Institute of Chemical Technology imeni D. I. Mendeleyev

"Study of Ion-exchange Membranes. V. Membrane Ion-exchange Electrodes in Nonaqueous Media"

Abstract: The authors studied the behavior of membrane ion-exchange electrodes in solutions of hydrogen chloride and trioctylamine chloride in dehydrated ethanol. The sensitive elements of the electrodes were cation-exchange membrane ankalit K-5 and anion-exchange membranes MA-100 and RMA-101. The results indicate that both cation-exchange and anion-exchange membrane electrodes can be used as indicator electrodes in media with average permittivity values. They should be precalibrated for precise electrochemical measurements. Cation-exchange membranes with strongly acidic functional groups display greater chemical activity in ethanol solutions than anion-exchange membranes containing tertiary and quaternary amino groups.

1/1

USSR

UDC 538.4

GEL'FGAT, Yu. M., OL'SHANSKIY, S. V., SHTERN, A. G.

"Experimental Study of the Interaction of a Flow with a Heterogeneous Magnetic Field"

7-ye Soveshch. po Magnit. Gidrodinamike. T. 1 [Seventh Conference on Magnetic Hydrodynamics, Vol 1], Riga, Zinatnye Press, 1972, pp 187-189, (Translated from Referativnyy Zhurnal, Mekhanika, No 11, 1972, Abstract No 11 B34 by A. L. Genkin).

Translation: Results are presented from experiments on determination of the hydraulic resistance of the flow of mercury in a circular tube in a heterogeneous magnetic field. The Reynolds number and magnetic interaction parameter change within limits $64,600 \leq R \leq 182,000$, $0 \leq N^* \leq 1.2$. It is demonstrated that the effectiveness of deceleration depends significantly on the magnetic field spacing T and is maximal with a T/S ratio of about 3.2, where S is the gap between projections in the poles of the magnet. The results of experiments agree qualitatively with calculations performed by a method described earlier by the authors (see abstract 11 B33).

1/1

USSR

UDC: 51:155.001.57:612.82

SHTERN, A. M.

"The Brain as a Measuring System"

V sb. Biol., med. kibernet. i bionika (Biology, Medical Cybernetics and Bionics--collection of works), vyp. 3, Kiev, 1970, pp 25-37 (from RZh--Kibernetika, No 7, Jul 71, Abstract No 7V794)

Translation: In contrast to passive computer data processing, a human being actively interacts with the data, introducing disturbances and re-distributing the probabilities of events with regard to subjective at-titude toward possible outcomes. In order to give some substantive explanation to this fundamental phenomenon of thought, an analogy is made with the phenomenon called the uncertainty principle in quantum physics. A kinship between the structure of the psychological phenomenon and processes of quantum measurement is detected when an attempt is made to follow a thought: any attempt to precisely describe the thought process introduces unpredictable and uncontrollable changes in the initial process. This analogy has led to formulation of the hypothesis of existence of reproducible (deterministic) and nonreproducible (Proba-bilistic) types of thought. An experiment is described which is aimed

1/2

- 88 -

SHTERN, A. M., Biol., med. kibernet. i bionika, vyp. 3, Kiev, 1970,
pp 25-37

at confirming the validity of this hypothesis. Deterministic thought
is obtained with a small volume of data to be processed, which volume is
indeed a certain threshold characteristic limiting the possibilities of
a man for error-free deterministic thinking. Note is also taken of the
contrast between the indicated types of thought with respect to electro-
physiological characteristics. Components of asymmetric oscillations
with periods of minutes and seconds have been isolated on an EEG. De-
pressions of oscillations of the shorter period is observed in the case
of deterministic thought. In the case of the probabilistic type of
thought, depression of oscillations with the shorter period occurred
simultaneously with the intensification of the oscillations with the
longer period. Experimental EEG curves are presented which were obtained
after computer processing and characterize the electrophysiological
properties of thought. The author describes the results of an experiment
on the effect of a fixed magnetic field on the brain. Splitting of
the image of a luminous point into two images was observed in 7 out of
10 test subjects. It is hypothesized that data transmission is by par-
ticles with half-integer spin. It is concluded that a quantum-mechanical
model of a nerve pulse can be constructed. The principle of using a
formal framework for describing the thought mehcanism is shown. A. Doroshenko.
2/2

1/2   027   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--USE OF A CALIBRATION HETERODYNE IN DISPERSION INTERFEROMETERS -U-

AUTHOR-(02)-SHTERN, D.YA., ROMANOVA, L.I.

COUNTRY OF INFO--USSR

SOURCE--RADIOTEKHNIKA I ELEKTRONIKA (RADIO ELECTRONICS), 1970, NO 2, PP
227-232

DATE PUBLISHED-------70

SUBJECT AREAS--METHODS AND EQUIPMENT, ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--INTERFEROMETER, ELECTRIC FILTER, TEST INSTRUMENTATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1890   STEP NO--UR/0109/70/000/002/0227/0232

CIRC ACCESSION NO--AP0130717
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0130717
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD FOR CONSTRUCTING
  DISPERSION INTERFEROMETERS WITH THE USE OF A CALIBRATION HETERODYNE IS
  EXAMINED AND THE BASIC RELATIONS ARE PRESENTED. FORMULAS ARE GIVEN
  WHICH MAKE IT POSSIBLE TO EVALUATE THE PHASE STABILITY OF THE
  INTERFEROMETER RECEIVER. IT IS FOUND THAT A TWO SECTION FILTER WITH
  COUPLING (DETUNING) COEFFICIENT 1 0.6 HAS THE BEST PHASE CHARACTERISTIC.
  THE BASIC CONCLUSIONS OF THE STUDY ARE ALSO APPLICABLE TO OTHER FORMS
  OF PHASE SYSTEMS.

UNCLASSIFIED

TITLE--SMOTHERING OF DUST -U-   UNCLASSIFIED   PROCESSING DATE--27NOV70

AUTHOR-(03)-CHIZHKOV, YE.N., GOLOVINA, N.I., SHTERN, E.K.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 262,819
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--04FEB70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--INDUSTRIAL HYGIENE, RESPIRATORY SYSTEM, SURFACE ACTIVE AGENT,
     PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1408
                                STEP NO--UR/0482/70/000/000/0000/0000
CIRC ACCESSION NO--AA0128807
                       UNCLASSIFIED

CIRC ACCESSION NO--AA0128807   UNCLASSIFIED   PROCESSING DATE--27NOV70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. WETTING AGENTS, SUCH AS ALK. ESTS.
OF PEAT, ARE USED TO SMOTHER DUST AT LOW TEMPS. PEAT AND AN AQ.
0.1-0.3N NAOH SOLN. WERE USED IN A 1:30-1:100 RATIO.   FACILITY:
CENTRAL SCIENTIFIC RESEARCH AND DESIGN CONSTRUCTION INSTITUTE OF
PROPHYLACTICS FOR PNEUMOCONIOSES AND SAFETY TECHNIQUES.

UNCLASSIFIED

USSR

SHTERN, I. B.

"Set-Theory Interpretation of the Concepts of Regularity, Similarity and Predictability in Word Formation"

Lingvist. Probl. Avtomatiz. Inform. Poiska [Linguistic Problems of the Automation of Information Retrieval -- Collection of Works], Kiev, 1972, pp 3-12 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V820).

Translation: This article uses a classification of units based on set theory relationships such as identity, strict inclusion and partial intersection to describe regularity, similarity and predictability of the increase in word-forming units (situational nest structures). The identity classification allows regularity classes of situational models of nests to be segregated and the degree of their regularity to be estimated, the inclusion classification allows classes of nests most inclined to growth to be indicated, while partial intersection allows relationships of tolerance and neighborhood to be differentiated.

Ye. Burgina

1/1

USSR

POVALISHINA, T. P., SADOVSKAYA, Ye. V., SHTERN, M. A., and KUZ'MENKO, S. V.,
Institute of Poliomyelitis and Viral Encephalitides, USSR Academy of Medical
Sciences

UDC 616.61-002.151-036.21(470.312)

"Sites of Infection With Hemorrhagic Fever With a Renal Syndrome in One of
the Foci in Tul'skaya Oblast"

Abstract: The Leninskiy rayon in Tul'skaya oblast is a forest-covered re-
creational area which has many summer cottages and is periodically visited by
nonimmune vacationers. Since it also is a focus of hemorrhagic fever with a
renal syndrome, many zoological, parasitological, and epidemiological obser-
vations were conducted there between 1951 and 1966. During these 15 years,
a total of 5,031 small rodents of 17 different species were caught, with
Clethrionomys glareolus the most numerous and representing 57.2% of rodents
caught inside cottages. Annual outbreaks of the disease, involving a few to
several hundred cases, are characteristically limited to small areas and occur
in the spring and summer season, with peaks in June-August. Most people are
infected inside the makeshift accommodations (cottages and tents) while tidying

1/2

USSR

POVALISHINA, T. P. et al, Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 5, May 71, pp 41-45

up the facilities or during sleep. No clear-cut correlation was found between the severity of the outbreak and the size of the rodent population. On the other hand, the duration of the rodents' reproductive period seems to ce of great significance, since late autumn and winter breeding periods are preceded by the greatest outbreaks of hemorrhagic fever. Of the many preventive methods developed, rodent extermination in housing facilities is more effective than extermination in the rodents' natural habitats. The best preventive measure is construction of better-quality cottages, which are inaccessible to rodents.

2/2

- 28 -

USSR

UDC: 621.762.045

MAKSIMENKO, L. A., SHTERN, M. B., RADOMYSEL'SKIY, I. D., SERDYUK, G. G., Kiev State University imeni T. G. Shevchenko, Institute of Problems of Material Science, Academy of Sciences, UKRSSR

"The Existence of Strong Shock Waves During High-Speed Pressing of Metal Powders"

Abstract: It is proven that strong shock waves, i.e., discontinuities of all parameters of the compacted medium (density, pressure, velocity, entropy) can arise with high-speed (impact) loading of metal powders. The authors observed compression jumps upon impact pressing of type PZh2M iron powder with initial pressing speeds of over 100 m/sec. This provides experimental confirmation of the existence of strong shock waves in metal powders when the pressing speed exceeds the speed of sound in the powder.

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USSR

ARDELYAN, N.G., MILYUTIN, D.D., SHTERN, V.A.

UDC 621.385.632

"Some Results Of An Experimental Investigation Of The Operation Of A TWT In A Regime Of Simultaneous Amplification Of Two Harmonic Signals Of Different Frequencies"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronics Technology. Microwave Electronics), 1970, No 5, pp 141-144 Scientific-Technical Collection. Microwave Electronics), 1970, No 5, pp 141-144 (from RZh--Elektronika i yeye primeneniye, No 8, August 1970, Abstract No 6A143)

Translation: An account is given of the results of an experimental investigation of the operation of a TWT with the delivery at the input of two harmonic signals with frequencies f_1 and f_2. On exposure of such signals to the TWT, predominant amplification of one of them was not observed for a detuning of the frequency $\Delta f = 15$ MHz. Under equal conditions the signals with frequencies f_1 and f_2 were amplified equally. With equality of the input powers of the signals f_1 and f_2, the powers of the signals of these frequencies at the output of a TWT were equal, and the powers of the combinative components of the second and third order were also equal. It is possible to compare the power of the combinative components with the power of the basic signals. The suppression coefficient with unequal powers of the input signal depends on the voltage in the decelerating system of the device, which permits it to be controlled. 6 ill. 3 ref. G.B.
1/1

Miscellaneous

USSR

UDC 669.71.472

DERKACH, A. S., KALUZHSKIY, N. A., KULAKOV, A. I., SHTERN, V. I.

"Calculating an Aluminum Electrolyzer on a Digital Computer by the Energy Balance Method"

Tr. Vses. n.-i. i proyektn. in-ta alyumin., magn. i elektrodn. prom-sti (Works of the All-Union Scientific Research and Planning and Design Institute of Aluminum, Magnesium and Electrode Industry), 1970, No 71, pp 45-62 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G163)

Translation: Results and the procedure of computer calculation of an electro- lyzer with side current lead-in are discussed. D, the energy yield, and a number of other parameters are calculated as functions of the selected current strength, anode width, and spacing between the ends of the pins in the anode. The effect of possible errors with errors in assigning the pole spacing, the electrochemical component of the voltage drop, the specific electrical con- ductivity of the electrolyzer, the magnitude of the current efficiency, and the heat losses of the electrolyzer on the final calculation result was analyzed. The procedure for calculating the electrolyzer can be used in design developments when selecting the optimal design of the electrolyzer. The directions in which it is necessary to continue work to refine the 1/2

USSR

DERKACH, A. S., et al., <u>Tr. Vses. n.-i. i proyektn. in-ta alyumin., magn. i elektrodn. prom-sti</u>, 1970, No 71, pp 45-62

mathematical model of the electrolyzer and the calculation procedure are indicated. There are 8 illustrations and 1 table.

2/2

USSR

MINTSIS, M. YA., and SHTERN, V. I.

"Testing the Duration of the Anode Effects During Electrolysis of Aluminum"

Abstract: The introduction of a testing and regulation system has demonstrated that the mean duration of the anode effects significantly exceeds the time interval necessary for liquidation of anode effects. A test system is suggested for recording electrolyzers in which the duration of the anode effect exceeds a fixed value. This allows improvement of the technological discipline of servicing of electrolyzers and decreases the mean duration of anode effects by 25 sec.

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- 2 -

USSR

GOL'DSHTIK, M. A., SAPOZHNIKOV, V. A., SHTERN, V. N., Novosibirsk

"Testing of the Malkus Hypothesis of Stability of Turbulent Flows"

Moscow, Mekhanika Zhidosti i Gaza, No 5, Sep-Oct 70, pp 172-176

Abstract: Numerical calculations indicate that even if the re-
quirements of Malkus are fulfilled, they do not allow unambiguous
determination of the experimental profile. The numerical analysis
performed in this article leads to the following conclusions:
a) the critical Reynolds number for velocity profiles similar to
the experimental profiles is over an order of magnitude higher
than the Reynolds number for which these profiles are realized;
b) the critical Reynolds number grows in proportion to the Rey-
nolds number of the flow; c) among the neutral stable profiles,
profiles can be found which correspond to arbitrarily high energy
dissipation; d) neutral, stable profiles with fixed dissipation
of energy can have arbitrary form outside the viscous sublayer
and transient layer. Thus, the principal hypotheses of Malkus
concerning boundary stability of an averaged turbulent flow to
infinitely small perturbations are not confirmed. Stability of
1/2

USSR

GOL'DSHTIK, M. A., et al, Mekhanika Zhidosti i Gaza, No 5, Sep-
Oct 70, pp 172-176

averaged turbulent fields to finite perturbations is, however, an
experimental fact. If at the initial moment in time, the energy
distribution function is distrubed with respect to frequencies
of turbulent pulsations, equillibrium distribution of energy and
the profile of average velocity is restored rather rapidly in the
flow. Consequently, the averaged turbulent fields do not have
the property of neutral stability. The calculations in this
article indicate deep stability of averaged velocity fields even
without consideration of the stabilizing influence of Reynolds
stresses, related to their direct interaction with the perturba-
tions. While they contradict the hypotheses of Malkus, the re-
sults produced do not close the path to phenomenological descrip-
tion of turbulence on the basis of the stability properties.
Indicating the deep stability of turbulent fields, they indirectly
speak in favor of the principle of the maximal stability,
developed in other works.

2/2

1/2   027
TITLE--LOCAL PROPERTIES OF THE PROBLEM OF HYDRODYNAMIC STABILITY -U-
UNCLASSIFIED   PROCESSING DATE--20NOV70

AUTHOR-(03)-GOLDSHTIK, M.A., SAPOZHNIKOV, V.A., SHTERN, V.N.

COUNTRY OF INFO--USSR

SOURCE--PMTF, ZHURNAL PRIKLADNOI MEKHANIKI I TEKHNICHESKOI FIZIKI,
MAR.-APR. 1970, P. 56-61
DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--REYNOLDS NUMBER, HYDRODYNAMIC PROPERTY, FLOW STABILITY,
PERTURBATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/1399
CIRC ACCESSION NO--AP0133351
STEP NO--UR/0207/70/000/000/0056/0061

UNCLASSIFIED

CIRC ACCESSICN NO--AP0133351

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FORMULATION OF LOCALIZABILITY
  PROPERTIES FOR SHORT WAVE PERTURBATIONS IN THE PROBLEM OF HYDRODYNAMIC
  STABILITY. THESE PROPERTIES CAN BE USED TO STUDY NOT ONLY THE GLOBAL
  STABILITY OF A FLOW BUT ALSO THE STABILITY OF INDIVIDUAL PARTS OF THE
  FLOW, FOR EXAMPLE, THE FLOW CORE OR THE WALL ZONE. THE LOCALIZABILITY
  PROPERTIES ARE ILLUSTRATED IN THE CASE OF THE SMALL PERTURBATION
  SPECTRUM OF A PLANE POISEUILLE FLOW AND OF FLOWS OBTAINED BY DEFORMATION
  OF A SMALL SECTION OF THE POISEUILLE PARABOLA. IT IS SHOWN THAT THE
  OCCURRENCE OF POINTS OF INFLECTION IN SUCH DEFORMATION LEADS TO THE
  APPEARANCE CF GROWING PERTURBATIONS WITH A WAVELENGTH OF THE ORDER OF
  THE DEFORMATION ZONE. IT IS ALSO SHOWN THAT DISCONTINUITY POINTS IN THE
  VELOCITY PROFILE LEAD TO A LOSS OF STABILITY AT FAIRLY LARGE REYNOLDS
  NUMBERS.

UNCLASSIFIED

SHTENBERG, A. I.

MINERAL COMPOSITION OF THE RAT'S ARTIFICIAL DIET

In experimental investigations on animals, artificial mixtures are often used as a special diet, consisting of casein, sugar, vegetable oil, vitamins, and salt compositions. Minerals which are biologically important are added to the animals' diet in the form of a mineral mixture consisting of different salts constituting 2-6 percent of the total weight of the ration. At the present time, diverse mineral salt mixtures that have been proposed at different times are used. Table 1 submits the composition of mixtures most commonly used for the last few years in experimental research.

It can be noted that there are differences in quantities mainly of ratio ranges from 0.65 to 4.2. The roster of essential elements in the such elements as calcium, phosphorus, iodine, while the calcium/phosphorus mixtures also varies, since new data have appeared in recent years about the biological role of such elements as selenium, molybdenum, cobalt, and others. After analyzing the data in the current literature, we used them as the basis for a mixture which, in our opinion, should adequately meet animal require- ments with regard to minerals.

According to the literature (A.O. Vaynar; Gutherson; McCoy; Spector; Underwood), the minerals essential to albino rats are calcium, phosphorus, potassium, sodium, magnesium, manganese, chlorine, iodine, iron, copper, zinc, selenium, and sulfur. Relatively recently studies have been published indicating the biological role of molybdenum, however, there are not enough data to describe it completely from the biological point of view and to determine the requirements for rats. For this reason, we included it in the mixture as an optional element. In the following we shall discuss the need for each element included in the mixture we propose and we shall evaluate the elements that were included formerly but that we did not use (cobalt, fluorine, aluminum) in the proposed mixture.

- 68 -

SHTENBERG, A. I.

CORRELATION BETWEEN GENERAL TOXIC, EMBRYOTOXIC, AND TERATOGENIC ACTION OF FOREIGN CHEMICALS AND POSSIBILITY OF FORECASTING THEIR EFFECT ON PRENATAL ONTOGENY

Analysis of works dealing with the teratogenic properties of chemical agents foreign to the organism indicate that extrapolation of the results of experimental investigations to other species of animals, let alone man, involves major difficulties. One of the chief causes for this is the difference in species-specific and line-specific action of the same animals to the teratogenic action of the same agent. As a result the experimental findings (even those obtained on different animal species) often do not permit accurate enough evaluation of the degree of danger of the agent under study to man, especially if this agent was administered in small doses and developmental anomalies were noted only in isolated fetuses. For this reason, in order to obtain precise enough data, the method of conducting the experiment and of evaluating the results obtained is very important. In the last few years several works have appeared in the literature that offer different approaches to this problem (A.A. Dinerman; A.P. Dybau; A.P. Dybau et al.; Hafez; Tuchmann-Duplessis). The results of investigations pursued in the laboratory of pesticide toxicology of the Institute of Nutrition, USSR Academy of Medical Sciences, make it possible to consider the question of correlation between general toxic, embryotoxic, and teratogenic action of foreign chemical agents as it relates to the above problem as well.

We investigated the effect of pesticides of the carbomate group, benlate and sevine, on embryogenesis of Wistar albino rats. Benlate is a new and, apparently, promising pesticide. Its LD50 for rats, according to our data, is over 10,000 mg per kg of body weight. Benlate is a new and, apparently, promising pesticide. Different authors have investigated the teratogenic action of sevine on dogs, monkrel albino rats, hamsters, rabbits, and guinea pigs, and contradictory results were obtained. For this reason it was interesting to investigate its influence on embryo-genesis of Wistar rats and to compare the results with the data of other

Food Technology

SHTENBERG, A. I. and SVODNOVA, N. S. Department of Hygiene, Institute of Nutrition, Academy of Medical Sciences USSR, Moscow

"Toxicity Studies of Food Additives in the USSR"

Abstract: The literature on the toxicity of food additives published during the past 20 years is reviewed. Topics included are: the toxicologial effects of such antioxidants as butoxyanisole, butoxytoluene, propyl gallate, dodecyl gallate, and maleic esters on the living organism; the high sensitivity of enzyme systems antioxidants; the importance of phosphatides in preventing the oxidation of fats; the use of sulfur derivatives, benzoic acid and its salts as food preservatives in the Soviet Union; the use of antibiotics as food additives on an industrial scale; food coloring and its toxicological effects; the use of nitrates and nitrites as food additives; aromatic principles and their toxicological effects; and the use of enzyme preparations.

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SHTERNBERG, E. Ya.

COMPARATIVE AGE-RELATED ASPECT OF SYMPTOMATOLOGY OF SCHIZOPHRENIA
(psychiatry)

The need to investigate the age-related aspect of schizophrenia arose at a specific stage of research as one of the most important and promising approaches to explaining the polymorphism of clinical manifestations of this disease. Such investigation became particularly timely in view of better organization of psychiatric care and the well-known changes in age-related structure of the population of mental patients, consisting of broadening of the age boundaries of schizophrenic psychoses. We refer here to the increase in number of children and older patients now seen by the psychiatrist. Development of modern psychiatry as a whole in this direction became, as we know, the reason for isolating first childhood and then gerontological psychiatry as independent disciplines.

In children and older people the clinical manifestations of mental disease are quite different from those present in the middle-aged and mature. This fact acquired special significance in view of the fact that observations pertaining to mental disorders in middle age served as the basis not only of our clinical nosological concepts and nosological systems developed by clinical psychiatry, but also of the psychopathological concepts through which many diseases were described and qualified. It is not by chance, therefore, that efforts to qualify satisfactorily and to furnish nosological interpretation to mental disorders among children and the elderly with the help of the system of clinical and psychopathological concepts developed on the basis of pathology of the middle-aged encountered significant and fundamental difficulties.

The actual need for clinical systematization of the ever increasing observations gathered for both extreme age groups was, at a specific stage of development of clinical psychiatry, the reason for efforts to distinguish more and more new, presumably independent psychoses of both age groups, i.e. age-related psychoses in the proper sense, the history of geriatric psychiatry of the last 50-70 years is a particularly vivid example of this tendency. However, the failures of most such nosographic attempts inspired

- 26 -

USSR

VASIL'YEV, N. V., SHTERNBERG, I. B., and BOGINICH, L. F.

UDC 577.3

"The Magnetic Field, Infection, and Immunity"

Vliyaniye Magnitnykh Poley na Biologicheskiye Ob"yekty, pp 108-123

Abstract: This article presents the results of research conducted in various laboratories, above all the projects of the authors themselves, on the question of the effect of a magnetic field on the organism's immunobiological reactivity. It is demonstrated that a magnetic field is a physical factor which is unquestionably active in relation to the mechanisms of immunobiological reactivity in both its nonspecific and specific elements. The effect of a magnetic field on the formation of antibodies has aspects which are similar to the effect of ionizing radiation. It is established that the magnetic field by itself, without immunization, is capable of arousing in lymphoid tissue a set of changes which are similar to immunomorphological ones. The possibility is not excluded that this circumstance is related to the stressor action of both immunization and a magnetic field. The basic directions for work in this area are laid out.

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172   036

UNCLASSIFIED

PROCESSING DATE--27NOV70

TITLE--THE STATE OF THE HYPOPHYSIAL ADRENAL SYSTEM IN CARDIOVASCULAR DYSTONIA UNDER HIGH MOUNTAIN CONDITIONS -U-

AUTHOR--SHTERNSHIS, S.Z.

COUNTRY OF INFO--USSR

SOURCE--VOYENNO-MEDITSINSKIY ZHURNAL, 1970, NR 3, P 123

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CARDIOVASCULAR SYSTEM, ALTITUDE ADAPTATION, ADRENAL GLAND, ACCLIMATIZATION, TEST, URINE, BLOOD PRESSURE, HYPERTENSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/0393

STEP NO--UR/0177/70/000/003/0123/0123

CIRC ACCESSION NO--AP0135873

UNCLASSIFIED

036

CIRC ACCESSION NO--AP0135873   UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. UNDER HIGH MOUNTAIN CONDITIONS, AS
CLINICAL DATA SHOW, SIDE BY SIDE WITH DISORDER OF THE VASCULAR TONUS IN
A CONSIDERABLE PERCENTAGE OF PERSONS ONE OBSERVES SYMPTOMS OF
HYPOCORTICISM (HEADACHES, TORPIDITY, ASTHENIA, GASTROINTESTINAL
DISORDERS, EOSINOPHILIA, MYASTHENIA UNDER LIGH PHYSICLA LOADS, AND
PERSISTENT ARTERIAL HYPOTONIA), CHARACTERISTIC OF SO CALLED MOUNTAIN
ILLNESS AS WELL. THOSE SYMPTOMS ARE ENCOUNTERED ESPECIALLY OFTEN IN
NEWLY ARRIVED PERSONS IN THE PERIOD OF ACCLIMATIZATION. OUR
OBSERVATIONS WERE MADE IN REGIONS OF ZAKAVKAZ"YE AT HEIGHTS OF
1600-3600 METERS ABOVE SEA LEVEL. TO EVALUATE THE FUNCTIONAL STATE OF
THE ADRENAL CORTEX, THORN TEST AND EXCRETION OF UROPEPSIN WITH THE URINE
WERE USED. THE CONTENT OF UROPEPSIN IN THE DAILY QUANTITIY OF URINE WAS
DETERMINED BY WEST'S METHOD. THE INVESTIGATIONS WERE CONDUCTED ON 62
PERSONS, IN 29 OF THEM THERE WAS HYPOTONIA (ARTERIAL PRESSURE OF 80-50
TO 100-60 MM HG), IN 15 HYPERTENSIVE SYNDROME (150-90 TO 170-110 MM HG),
AND IN 18 THE ARTERIAL PRESSURE WAS IN THE LIMITS OF THE NORMAL. THE
LAST GROUP WAS THE CONTROL GROUP. THE AVERAGE LEVEL OF EXCRETION OF
UROPEPSIN IN THAT GROUP VARIED FROM 19 TO 40 UNITS, ON THE AVERAGE 32.1
UNITS PER HOUR.

UNCLASSIFIED

USSR

ZAGORSKIY, V. T., KOZLYAYEV, Yu. D., DVORKINA, G. Sh., MALAKHOV, A. P., SHTERNSHIS, V. Yu.

UDC 621.314.58(088.8)

"Direct Thyristor Frequency Converter with Unit for Forced Commutation"

Translation: The circuit for a converter of 3-phase a-c voltage of stable frequency into 3-phase a-c voltage of controlled frequency contains: a rectifier block (18 thyristors), commutating capacitors, cathode and anode groups of semiconductor diodes, and a rectifier commutating device (6 thyristors). It is proposed to supplement the circuits with two capacitors connected between the zero point and the anode and cathode buses of the commutation device. The capacitors mentioned shunt the reactance of the phases of the feeding transformer and assist acceleration of the commutation process. Balanced thyristors are connected into the circuit of the supplementary capacitors for limitation of the pulse currents, while in the case of formation of a short circuit on the load, unblocking pulses are not presented to the symmetrical thyristors. 1 ill. A. S.
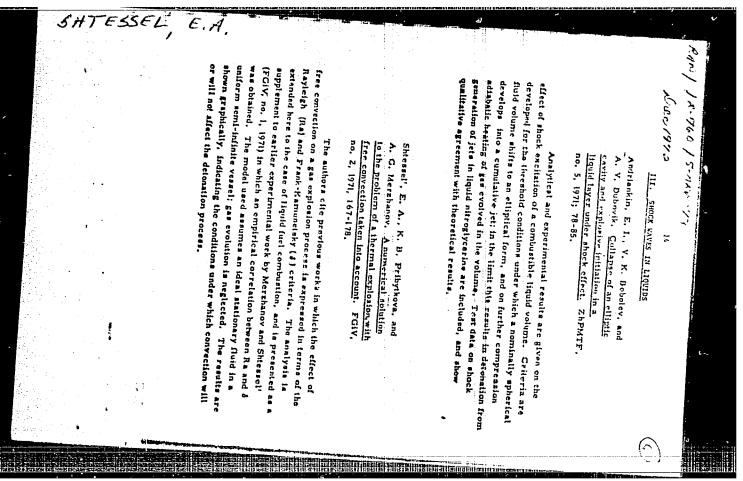
1/1

- 103 -

USSR

SHTESSEL', E. A., AVERSON, A. E., PRIBYTKOVA, K. V.   UDC 536.46:533.6

"On the Effect of Natural Convection on the Ignition of Liquid Systems"

Translation: An approximate theoretical analysis is presented of the pheno-
menon of ignition considering natural convection. A layer of sufficiently
great depth that is infinite in the horizontal direction is considered. Emis-
sion is carried out by heating from below under two types of boundary conditions:
(a) at a constant temperature of the surface in the course of the process, and
(b) under a constant thermal flow. The system of equations of motion, energy,
and continuity is investigated. As a result of the physical assumptions made,
it is possible to solve the problem by the method of consecutive approximations
using the method of integral relationships. Analytical functions showing the
lag time as a function of the Reynolds number characterizing the convection
intensity and the Prandtl number are obtained for two types of boundary condi-
tions. Several features in the combustion process involved in the natural
convection developed are discussed. Authors' abstract.
1/1

SHTESSEL, E.A.

III. SHOCK WAVES IN LIQUIDS

14

Andriankin, E. I., V. K. Bobolev, and A. V. Dubovik. Collapse of an elliptic cavity and explosive initiation in a liquid layer under shock effect. ZhPMTF, no. 5, 1971; 78-85.

Analytical and experimental results are given on the effect of shock excitation of a combustible liquid volume. Criteria are developed for the threshold conditions under which a nominally spherical fluid volume shifts to an elliptical form, and on further compression develops into a cumulative jet in the limit this results in detonation from adiabatic heating of gas evolved in the volume. Test data on shock generation of jets in liquid nitroglycerine are included, and show qualitative agreement with theoretical results.

Shessel', E. A., K. B. Pribytkova, and A. G. Merzhanov. A numerical solution to the problem of a thermal explosion with free convection taken into account. FGIV, no. 2, 1971; 167-178.

The authors cite previous works in which the effect of Rayleigh (Ra) and Frank-Kamenetsky (d) criteria. The analysis is extended here to the case of liquid fuel combustion, and is presented as a supplement to earlier experimental work by Merzhanov and Shessel' (FGIV, no. 1, 1971) in which an empirical correlation between Ra and d was obtained. The model used assumes an ideal stationary fluid in a uniform semi-infinite vessel; gas evolution is neglected. The results are shown graphically, indicating the conditions under which convection will or will not affect the detonation process.

USSR

UDC 532.596.2

MERZHANOV, A. G., SHTESSEL', E. A., Moscow

"Thermal Explosion in Liquid Reacting Systems with Thermal Convection"

Fizika Goreniya i Vzryva, No 1, Mar 71, pp 68-76.

ABSTRACT: This work presents a study of the influence of free convection in a reacting medium on the conditions of development of thermal explosion. The main task of the investigation is the establishment of a relationship between the limit of the thermal explosion and quantities characterizing natural convection. Analysis of experimental results produced on specially selected models is used to establish the form of the function f(Ra) for the planar and cylindrical cases, and certain problems of the mechanism of thermal explosion in the presence of convection are discussed.

1/1

- 45 -

USSR   UDC 536.46

MERZHANOV, A. G., and SHTESSEL', E. A., Institute of Chemical Physics, Moscow Academy of Sciences USSR

"Thermal Explosion in the Liquid Phase in the Presence of Natural Convection"

Abstract: The article analyzes experimental data obtained on specially selected models to establish the form of the function $f(\text{Ra})$ for the two-dimensional case. The models chosen were mixtures of hexamethylene diisocyanate with various alcohols in 1:2 ratios. Questions on the mechanism of a thermal explosion in the presence of convection are discussed, viz. the effective coefficient of internal heat transfer, the influence of the rate of internal heat emission, the temperature distribution in the reaction zone.

1/1

1/2   022

UNCLASSIFIED

TITLE--EMERGENCE AND DEVELOPMENT OF THERMAL CONVECTION IN A LAYER OF VISCOUS LIQUID -U-

PROCESSING DATE--04DEC70

AUTHOR-(02)-MERZHANOV, A.G., SHTESSEL, E.A.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(4), 779-82 (MECH)

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SUBJECT AREAS--PHYSICS

TOPIC TAGS--THERMAL CONVECTION, VISCOUS FLUID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

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2/2   022
CIRC ACCESSION NO--AT0127791

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TEMP. T SUBK AT DIFFERENT
HEIGHTS (H) OF LIQS. OF DIFFERENT VISCOSITIES (V) WAS MEASURED BY A
MOVABLE CU CONSTANTAN THERMOCOUPLE IN A CEL (23 TIMES 19 TIMES 4 CM) IN
CONTACT WITH AIR AT T SUBO. THE EFFECT OF CONVECTION, Q SUBM, BECAME
APPARENT AFTER AN INDUCTION PERIOD TAU SUBIND AND ROSE SHARPLY BEYOND A
CRIT. RAYLEIGH NO., R ALPHA SUBCR. FOR LIQS. WITH A PRANDTL NO. PR
LARGER THAN 10 PRIME2, R SLPHA SUBCR WAS INDEPENDENT OF PR AND WAS 1150.
AT TAU SUBIND, THE LIQ. IN THE CELL INCREASED IN TURBULENCE. EXPTL. T
SUBIND EQUALS A R ALPHA PRIMEM PR PRIMEN EQUALS A(G BETA(T SUBO MINUS T
SUBK) PRIME NEGATIVEM V PRIME FIVE SIXTHS ALPHA PRIME NEGATIVEN, WHERE A
EQUALS 70, M EQUALS TWO THIRDS, N EQUALS ONE SIXTH, BETA EQUALS COEFF,
OF VOL. EXPANSION, AND ALPHA EQUALS COEFF. OF HEAT TRANSFER.
FACILITY: FILIAL INST. KHIM. FIZ., CHERNOGOLOVKA, USSR.

Converters

USSR

UDC: 621.376.56

GRISHANKOV, B. T., PODPAL'KO, L. F., SHTEYERMAN, L. M.

"Peculiarities in the Use of Exponential Converters in the Microsecond Range"

Translation: The authors discuss the singularities of using pulse bridge elements in circuits which operate in the range from a few microseconds to tens of microseconds. The delay of bridge pulse elements is considered from the standpoint of the time duration precision required. Three illustrations, three tables, bibliography of four titles. Resumé.

1/1

UNCLASSIFIED   PROCESSING DATE--04DEC70

1/5   013
TITLE--TASHKENT INSTITUTE GROUP MODELS SEISMIC PROCESSES, THE SECRETS OF
EARTH TREMORS ARE BEING REVEALED -U-

AUTHOR--SHTEYGER, A.

COUNTRY OF INFO--USSR

SOURCE--DUSHANBE KOMMUNIST TADZHIKISTANA 7 JUN 70 P 4 L

DATE PUBLISHED--07JUN70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--SEISMIC MODEL, EARTHQUAKE, SEISMOLOGY, GEOPHYSIC PERSONNEL,
ROCK

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605026/FOl STEP NO--UR/9006/70/000/000/0004/0004

CIRC ACCESSION NO--AN0141545
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CIRC ACCESSION NO--AN0141545
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NATURE CONTINUES TO STARTLE
MANKIND WITH HER SECRETS AND CAPRICES, AND THERE ARE MANY OF THEM. BUT
PERHAPS THE MOST DIFFICULT PUZZLE WHICH THE DEPTHS OF THE EARTH GIVE US
ARE THE SUDDEN EXPLOSIONS CALLED EARTH TREMORS. DESPITE THE FACT THAT
PEOPLE EXPERIENCED THE FORCE OF THESE EXPLOSIONS IN ANCIENT TIMES,
SCIENTIFIC STUDY OF THEM WAS ONLY INITIATED RECENTLY. IN ACCESSIBLE FOR
DIRECT OBSERVATION, THE DEPTHS AT WHICH SEISMIC ENERGY ACCUMULATES
HAMPER THE STUDY OF THE CONDITIONS AND CAUSES FOR THE OCCURRENCE OF
THESE CATASTROPHES. IT IS ONLY THROUGH THE COMPLEX ANALYSIS OF SEVERAL
DIRECT AND INDIRECT SIGNS THAT SCIENTISTS ARE BEGINNING TO UNDERSTAND
THE EARTH'S MYSTERIES AND THE WAYS TO FORECAST EARTH TREMORS. IT IS ON
THIS QUESTION, THE MODELING OF SEISMIC PROCESSES, THAT A NEW GROUP IN
THE TADZHIK SSR ACADEMY OF SCIENCES INSTITUTE OF EARTHQUAKE, RESIDENT
CONSTRUCTION AND SEISMOLOGY IS ENGAGED. NONE OF THE SECTION WORKERS
REMEMBERS WHO HUNG THE PHOTOGRAPH OF A KITTEN ON THE WAR. PERHAPS IT
CAME THERE BY ACCIDENT. NOBODY PAID ANY ATTENTION TO IT AT FIRST.
LATER, WHEN A GLEAM OF HOPE BEGAN TO PEER THROUGH IN THE WORK, THE
KITTEN BEGAN TO ASSUME A SYMBOLIC SIGNIFICANCE. NOW, ON ENTERING THE
LABORATORY IN THE MORNINGS AND GLANCING AT THE WALL, EACH ONE OF THE
WORKERS STATES WITH SATISFACTION: "HE'S HIMSELF AGAIN". THIS HAS NOW
COME TO MEAN THAT THERE IS AN ATMOSPHERE OF CREATIVITY AND CONFIDENCE IN
SUCCESS IN THE LABORATORY. UNTIL NOW ONLY ANIMALS, INCLUDING CATS, HAVE
BEEN ABLE TO SENSE AN EARTH TREMOR SEVERAL HOURS IN ADVANCE. IT IS
POSSIBLE THAT PEOPLE WILL SOON BE ABLE TO DO THIS.

UNCLASSIFIED